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09/596,009	06/16/2000	Brig Barnum Elliott	00-4010	2514

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EXAMINER

MOORTHY, ARAVIND K

ART UNIT

PAPER NUMBER

2131

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/596,009

Applicant(s)

ELLIOTT, BRIG BARNUM

Examiner

Aravind K Moorthy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-36 are pending in the application.
2. Claims 1-36 stand being rejected.

Response to Arguments

3. Applicant's arguments filed 5/17/04 have been fully considered but they are not persuasive.

On page 18, the applicant argues that Toh is not deemed to be functioning routers that have become compromised, and are not excised from the network or disregarded. The applicant argues that they are merely deemed to be less than ideal for routing.

The examiner respectfully disagrees. Toh teaches removing router that have been compromised.

On page 18, the applicant argues that Haas is not looking to determine that functioning nodes have become compromised, or to excise or disregard such nodes.

The examiner respectfully disagrees. Haas teaches that compromised nodes are deleted.

On page 19, the applicant argues that Li does not excise or disregard the inoperative router, but rather put an operative one in its place.

The examiner respectfully disagrees. Li teaches that data is rerouted. Therefore, data is cutoff from the compromised node.

On page 19, the applicant argues that Raz does not even relate to an ad-hoc wireless network and does not teach or suggest techniques for handling functioning of compromised routers.

The examiner respectfully disagrees. Raz teaches that wireless devices may be used in the network and deletion of compromised routers.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1, 2, 6-8, 10-12 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Toh U.S. Patent No. 5,987,011.

As to claims 1 and 24, Toh discloses an electronic memory circuit having network information stored therein [column 6, lines 22-47]. Toh discloses an electronic processor circuit that evaluates an excising signal received from the network control computer [column 6, lines 22-47]. Toh discloses that the excising signal contains information regarding a first router of the plurality of routers to be excised from the network [column 8, lines 23-48]. Toh discloses determining an authenticity of the excising signal [column 8, lines 23-48]. Toh discloses excising the first router when the excising signal is authenticated [column 9 line 14 to column 10

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line 7]. Toh discloses rerouting the excising signal to at least a second router of the plurality of routers when the excising signal is authenticated [column 9 line 14 to column 10 line 7].

As to claim 2, Toh discloses that the electronic processor circuit excises the first router by adding the first router to information regarding routers stored in the electronic memory circuit [column 7, lines 42-67]. Toh discloses removing from the electronic memory circuit routing updates corresponding to the first router [column 7, lines 42-67]. Toh discloses removing the first router from a neighbor table stored in the electronic memory circuit when the first router is listed therein [column 7, lines 42-67]. Toh discloses recomputing a forwarding table to direct future routing [column 7, lines 42-67].

As to claim 6, Toh discloses that the electronic processor reinstates the first station when the communications router receives and verifies a reinstate message from the network control computer [column 8, lines 36-41].

As to claim 7, Toh evaluating an excising signal received from the network control computer [column 19 line 17 to column 20 line 23]. Toh discloses that the excising signal contains information regarding a second router of the plurality of routers to be excised from the network [column 19 line 17 to column 20 line 23]. Toh discloses determining an authenticity of the excising signal [column 19 line 17 to column 20 line 23]. Toh discloses excising the second router when the excising signal is authentic. Toh discloses rerouting the excising signal to at least a third router of the plurality of routers [column 19 line 17 to column 20 line 23].

As to claim 8, Toh discloses adding the second router to information regarding routers stored in a memory [column 7, lines 42-67]. Toh discloses removing from the communications router routing updates corresponding to the second router [column 7, lines 42-67]. Toh discloses

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removing the second router from a neighbor table of the communications router when the second router is listed therein. Toh discloses recomputing a forwarding table [column 7, lines 42-67].

As to claims 10 and 11, Toh discloses evaluating a signal received through the transceiver from another network router [column 15, lines 39-57]. Toh discloses identifying which network router a signal has just been received from [column 15, lines 39-57]. Toh discloses determining if the network router is identified by the information regarding excised routers [column 16, lines 1-15]. Toh discloses discarding the signal when the router is listed. Toh discloses processing the signal when the router is not listed [column 16, lines 1-15]. Toh discloses processing the signal when the router is listed [column 16, lines 1-15]. Toh discloses recomputing the forwarding table [column 16, lines 1-15].

As to claim 12, Toh discloses removing the second router from information regarding non-compromised routers stored in a memory [column 7, lines 51-64]. Toh discloses removing from the communications router routing updates corresponding to the second router [column 11, lines 46-65]. Toh discloses removing the second router from a neighbor table of the communications router when the second router is listed therein [column 11, lines 46-65].

As to claim 15, Toh discloses the step of reinstating the second station when the communications router receives and verifies a reinstate message from the network control computer [column 12, lines 18-34].

5. Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Haas U.S. Patent No. 6,304,556 B1.

As to claim 16, Haas discloses a memory having network information stored thereon [column 7, lines 36-56]. Haas discloses a processor that operates the mobile station as a cluster

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head or cluster member station [column 8, lines 37-65]. Haas discloses that the processor evaluates an excising signal received from the network control computer, the excising signal containing information regarding a first cluster head or cluster member station to be excised from the network; (iii) verifies the authenticity of the excising signal; (iv) excises the first cluster head or cluster member station when the excising signal is authentic; and (v) distributes the excising signal to at least a second cluster head or cluster member station [column 9, lines 32-63].

6. Claims 25 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated Li et al U.S. Patent No. 5,473,599.

As to claims 25 and 26, Li et al discloses authenticating in the first router a signal received from the control computer, the signal identifying at least one router to be cut-off from communicating with the network [column 6 line 58 to column 7 line 15]. Li et al discloses preventing the first router from communicating with the at least one cut-off router when the signal is authenticated [column 7, lines 16-29]. Li et al discloses redistributing the cut-off signal to each of the plurality of routers, except for the at least one cut-off router, and preventing each of the remaining routers from communicating with the at least one cut-off router. Li et al discloses that when a router receives a message from one of the plurality of routers, the router determines if the message is from the at least one cut-off router, and processes the message only when the message is not from the at least one cut-off router [column 8, lines 8-56].

7. Claims 27-35 are rejected under 35 U.S.C. 102(e) as being anticipated Miriyala U.S. Patent No. 6,618,377 B1.

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As to claim 27, Miriyala discloses excising a compromised router from the network. Miriyala discloses determining whether messages transmitted between the plurality of routers are from the compromised router [column 6, lines 36-53].

As to claim 28, Miriyala discloses the step of reinstating the compromised router when it becomes non-compromised [column 7 line 63 to column 8 line 3].

As to claim 29, Miriyala discloses that the plurality of routers are prevented from communicating with the compromised router [column 12, lines 20-32].

As to claims 30 and 31, Miriyala discloses that the determining step comprises consulting a data structure representing excised routers to determine if the router is noncompromised [column 12, lines 34-55].

As to claim 32, Miriyala discloses code to excise a compromised router from the network [column 12, lines 20-32]. Miriyala discloses code to verify that messages transmitted among the plurality of routers are from non-compromised routers [column 12, lines 20-32]. Miriyala discloses code to reinstate the compromised router when it becomes non-compromised [column 12, lines 20-32].

As to claims 33 and 34, Miriyala discloses receiving a message from one of the plurality of routers in the network [column 13, lines 9-30]. Miriyala discloses determining a router identifier for the router that just transmitted the message [column 13, lines 9-30]. Miriyala discloses determining whether the information regarding compromised routers in the network includes the router identifier [column 13, lines 9-30]. Miriyala discloses disregarding the message when the router is listed in the information regarding compromised routers. Miriyala

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discloses disregarding the message when the router is not listed in the information regarding non-compromised routers [column 13, lines 41-56].

As to claim 35, Miriyala discloses determining a compromised router of the plurality of routers in the network, as discussed above. Miriyala discloses excising the compromised router from the network, as discussed above. Miriyala discloses preventing the plurality of routers from communicating with the compromised router, as discussed above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3, 4, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toh U.S. Patent No. 5,987,011 as applied to claim 1 above, and further in view of Raz et al U.S. Patent No. 6,529,515 B1.

As to claims 3, 9 and 13, Toh does not teach that the electronic processor circuit further causes a message to be transmitted to the network control computer and to disregard the excising signal each when the excising signal is not authentic.

Raz et al teaches a message to be transmitted to the network control computer and to disregard the excising signal each when the excising signal is not authentic [column 8, lines 9-27].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Toh so that a message would have been

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transmitted to the network control computer and to disregard the excising signal each when the excising signal is not authentic.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Toh by the teaching of Raz et al because it provides efficient use of network resources, without increasing the complexity of application development. Advantageously, it enables the safe execution and rapid deployment of new distributed management applications in a network layer. This active network approach can be gradually integrated into, e.g., an otherwise conventional IP network, and allows smooth migration from conventional IP to programmable networks [column 3, lines 5-15].

As to claim 4, Toh as modified teaches that the electronic processor circuit further evaluates a signal received through the transceiver from another network router. Toh as modified teaches identifying which network router the signal has been received from [column 15, lines 18-37]. Toh as modified teaches determining if the network router is listed with the information regarding excised routers. Toh as modified teaches discarding the signal when the router is listed. Toh as modified teaches processing the signal when the router is not listed [column 15, lines 39-57].

9. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toh U.S. Patent No. 5,987,011 as applied to claim 1 above, and further in view of Applied Cryptography (hereinafter Schneier).

As to claims 5 and 14, Toh does not teach that the electronic processor circuit determines the authenticity of the excising signal using a public encryption key.

Schneier teaches the use and benefits of public key encryption [pages 461-462].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Toh so that the electronic processor circuit would have determined the authenticity of the excising signal using a public encryption key.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Toh by the teaching of Raz et al because public-key is designed to resist chosen-plaintext attacks, their security is based both on the difficulty of deducing the secret key from the public key and the difficulty of deducing the plaintext from the cipher text [page 462].

10. Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al U.S. Patent No. 5,473,599 in view of Chaum U.S. Patent No. 4,947,430.

As to claims 17, 19 and 22, Li et al discloses formulating in the control computer an excise signal indicating at least a second router to be excised from the network [column 5, lines 26-39]. Li et al discloses adding the information identifying the second router to information regarding excised routers stored in memory of the first router, as discussed above. Li et al discloses removing from the first router routing updates corresponding to the second router. Li et al discloses removing information corresponding to the second router from a neighbor table of the first router when the second router is listed therein [column 6, lines 40-57]. Li et al discloses recomputing a forwarding table in the first router. Li et al discloses redistributing the excise signal to each of the plurality of routers, except for the second router [column 10, lines 12-45]. Li et al discloses determining, in each of the plurality of routers when receiving a message from another one of the plurality of routers. Li et al discloses an identifier for the router from which

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the message is received and processing the message only when the information regarding excised routers does not include the identifier authentic [column 13, lines 31-61].

Li et al does not teach providing a digital signature of the control computer on the excise signal and transmitting the excise signal to the first router. Li et al does not teach verifying the signature on the excise signal in the first router. Li et al does not teach that the digital signature is validated using a public encryption key.

Chaum teaches providing a digital signature of the control computer on the excise signal and transmitting the excise signal to the first router. Chaum teaches verifying the signature on the excise signal in the first router [column 3, lines 29-42]. Chaum teaches that the digital signature is validated using a public encryption key [column 8, lines 27-46].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Li et al so that a digital signature would have been provided for the control computer. The digital signature would have been verified on the excise signal in the first router. The digital signature would have been validated using a public key.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Li et al by the teaching of Chaum because it requires consent every time the signature is verified and provides a binding signature that cannot be forged to authenticate a user [column 2, lines 36-46].

As to claims 18 and 23, Li et al teaches the steps of transmitting a message to the control computer from the first router and causing the first router to disregard the excise signal each when the excise signal is not authentic [column 14, lines 28-56].

As to claim 20, Li et al teaches the step of reinstating the excised second router, as discussed above.

As to claim 21, Li et al teaches that a router disregards the message when the information regarding excised routers includes the identifier, as discussed above.

11. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miriyala U.S. Patent No. 6,618,377 B1 as applied to claim 35 above, and further in view of Nessett et al U.S. Patent No. 5,968,176.

As to claim 36, Miriyala does not teach determining step comprises determining a compromised router through embedded firewall functionality provided in each of the plurality of routers.

Nessett et al teaches routers with firewall functionality provided in each of the plurality of routers [column 7, lines 48-55].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Miriyala so that a compromised router would have been determined through its embedded firewall functionality provided in each of the plurality of routers.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Miriyala by the teaching of Nessett et al because security functions placed in network interface cards, in switches, in routers, and in remote access systems, and provides a system administrator the opportunity to move firewall functionality out to the variety of devices in the networks to create a pervasive, multilayer firewall. Security features can be distributed in multiple layers to multiple devices, and managed using a coherent security

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policy management interface that provides a security administrator convenient and clear control over the security properties of the network. The distributed functionality, and convenient and clear control allow scaling advantages for firewalls that now exist only for systems such as distributed remote monitoring dRMON, or other sophisticated network systems that are directed to single purpose functions [column 6, lines 12-26].

Conclusion

12. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

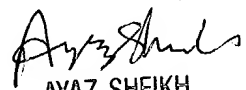
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aravind K Moorthy whose telephone number is 703-305-1373. The examiner can normally be reached on Monday-Friday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R Sheikh can be reached on 703-305-9648. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aravind K Moorthy
September 1, 2004


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